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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,628	03/29/2004	Kevin Swayne O'Hara	13DV-14043-5/11713 (21635)	3488
31450 7590 12/13/2007 MCNEES WALLACE & NURICK LLC 100 PINE STREET P.O. BOX 1166 HARRISBURG, PA 17108-1166			EXAMINER SHEEHAN, JOHN P	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 12/13/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/812,628	<b>Applicant(s)</b> O'HARA ET AL.	
	<b>Examiner</b> John P. Sheehan	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 15-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 19, 2007 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 15 to 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henry (US Patent No. 4,388,124).

Henry teaches a nickel base superalloy having a composition that overlaps the nickel base superalloy recited in the instant claims (Abstract and column 4, the Table). Henry teaches a tantalum content of 1 to 5.9 wt. % (Abstract), which encompasses the baseline tantalum content of "more than about 5 weight percent" and the modified

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tantalum content of at least 1.5 weight percent less than the baseline tantalum content” recited in the instant claims.

The claims and Henry differ in that Henry does not teach the instantly claimed steps of selecting a baseline alloy containing at least 5 wt% Ta and modifying the baseline nickel base superalloy to a Ta content that is at least 1.5 wt% less than the Ta content of the baseline alloy and the sum of Hf, Nb, Ti and W is at least greater than the baseline sum of these elements.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because Henry’s Ta proportions overlap both the claimed baseline alloy Ta content and the claimed modified Ta content recited in the instant claims and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, In re Peterson 65 USPQ2d 1379 (CAFC 2003). Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

It is the Examiner’s position that the instantly claimed process is the result of,

“The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages”, In re Peterson 65 USPQ2d 1379 (CAFC 2003). (emphasis added by the Examiner)

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In other words, without limiting the aspects of an alloy that can be optimized, Peterson plainly states that the normal desire of scientists is to improve known alloys by optimization. By not limiting the aspects of an alloy that can be optimized Peterson encompasses the optimization of any aspect of an alloy including the optimization of alloy properties and expense. Further, even in the absence of Peterson it is typical procedure to balance the cost of something against its benefits, that is, it is typical to do a cost benefit analysis and make a decision regarding the optimum scenario. The Examiner considers that the claimed process steps of identifying an alloy and selecting an alloy are those steps that would naturally flow in the optimization of Henry's alloys.

4. Claims 15 to 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over each of Darolla et al. (Darolla, US Patent No. 6,444,057) or Tamaki et al. (Tamaki, US Patent No. 6,051,083).

Each of the references teaches a single crystal nickel base superalloy for use in making gas turbine parts (Darolla, column 1, lines 54 to 59 and Tamaki, column 1, lines 6 to 15) having a composition that overlaps the instantly claimed alloy (Darolla, column 2, lines 1 to 26 and Tamaki, column 7, lines 37 to 55). Darolla teaches a Ta content of 4 to 12 wt% (column 2, line 8) and Tamaki teaches a Ta content of 2 to 12 wt% (column 7, line 44), which encompass the baseline tantalum content of "more than about 5 weight percent" and the modified tantalum content at least 1.5 weight percent less than the baseline tantalum content" recited in the instant claims.

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The claims and the references differ in that the references do not teach the instantly claimed steps of selecting a baseline alloy containing at least 5 wt% Ta and modifying the baseline nickel base superalloy to a Ta content that is at least 1.5 wt% less than the Ta content of the baseline alloy and the sum of Hf, Nb, Ti and W is at least greater than the baseline sum of these elements.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because Darolla's and Tamaki's Ta proportions overlap both the claimed baseline alloy Ta content and the claimed modified Ta content recited in the instant claims and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, In re Peterson 65 USPQ2d 1379 (CAFC 2003). Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

It is the Examiner's position that the instantly claimed process is the result of,

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003). (emphasis added by the Examiner)

In other words, without limiting the aspects of an alloy that can be optimized, Peterson plainly states that the normal desire of scientists is to improve known alloys by optimization. By not limiting the aspects of an alloy can be optimized Peterson

encompasses the optimization of any aspect of an alloy including the optimization of alloy properties and expense. Further, even in the absence of Peterson it is typical procedure to balance the cost of something against its benefits, that is, it is typical to do a cost benefit analysis and make a decision regarding the optimum scenario. The Examiner considers that the claimed process steps of identifying an alloy and selecting an alloy are those steps that would naturally flow in the optimization of Darolla's or Tamaki's alloys.

### ***Response to Arguments***

5. Applicant's arguments filed November 19, 2007 have been fully considered but they are not persuasive.

6. Applicants' argument that the instant invention is directed to a method of designing an alloy and that In re Peterson and related composition cases have no application here is not persuasive (applicants' response, page 6). For the reasons set forth above in the modified statement of the rejection, It is the Examiner's position that the instantly claimed process is the result of,

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003)." (emphasis added by the Examiner)

7. In other words, without limiting the aspects of an alloy that are to be optimized, Peterson plainly states that the normal desire of scientists is to improve known alloys by optimization. By not limiting what aspects of an alloy are to be optimized Peterson

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encompasses the optimization of any aspect of an alloy including the optimization of alloy properties and expense. Further, even in the absence of Peterson it is typical procedure to balance the cost of something against its benefits, that is, it is typical to do a cost benefit analysis and make a decision regarding the optimum scenario. The Examiner considers that the claimed process steps of identifying an alloy and selecting an alloy are those steps that would naturally flow in the optimization of Henry's, Darolla's or Tamaki's alloys. Accordingly, the Examiner's use of In re Peterson in this case is considered appropriate.

8. Applicants' argument that none of the applied references teach the need to increase the hafnium, columbium and tungsten content to make up for the reduced tantalum is not persuasive (response, page 6). In making the prior art rejections the Examiner is relying on In re Peterson. There is nothing in Peterson that requires that the reference teach the claimed invention of the application under consideration. If the reference did teach the claimed invention then the rejection would be made under 35 U.S.C §102 and not 35 U.S.C § 103.

9. Applicants, referring to the price of Ta at the time of Henry's invention, argue that;

"If the invention were truly obvious as a result of motivation of high tantalum prices, then Henry – the earliest disclosed reference - would presumably have addressed that specific point. ... Thus, Henry would have had the exact same motivation as the current inventors to significantly reduce tantalum content while



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sustaining alloy properties.” (response, page 7)

The Examiner is not persuaded. The prior art references are not required to, nor expected to present, all possible combinations of the disclosed inventions. Nor are the prior art references required to set forth all possible optimizations of the disclosed subject matter. The fact that the references do not discuss optimizing the disclosed alloy compositions on the basis of economics may be the result of the references having other priorities and does not preclude such an embodiment as an obvious variant of the disclosed inventions. This position is reinforced by In re Peterson,

“The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages”, In re Peterson 65 USPQ2d 1379 (CAFC 2003). (emphasis added by the Examiner)

If applicants’ argument was correct, then no improvements could be made to any patented or published disclosure of a process, machine or composition.

10. Applicants, citing In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977 and MPEP 2144.05(II)(B) argue that a particular parameter must be recognized as a result effective variable before it can be optimized and that because the recognition came from the inventors of the instant application the rejections should be withdrawn. The Examiner is not persuaded. There is nothing in In re Peterson that requires the recognition of a result effective variable, MPEP 2144.05(II)(A).


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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P. Sheehan whose telephone number is (571) 272-1249. The examiner can normally be reached on T-F (7:30-5:00) Second Monday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1700.

  
John P. Sheehan  
Primary Examiner  
Art Unit 1793

jps